ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

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The purpose of the Association for Women in Mathematics is to create a community in which women and girls can thrive in their mathematical endeavors, and to promote equitable opportunity and gender-inclusivity across the mathematical sciences.

IN THIS ISSUE

PRESIDENT'S REPORT

The year 2025 brings many transitions and opportunities, and I am excited about what lies ahead for the Association for Women in Mathematics (AWM). Guided by our renewed mission "to create a community in which women and girls can thrive in their mathematical endeavors and to promote equitable opportunity and gender-inclusivity across the mathematical sciences," we continue to create impactful programming, meaningful advocacy, and steadfast support for our members.

Serving as AWM President over these last few years has been a true honor. From hosting the AWM Research Symposium at Clark Atlanta University in October 2023 to the upcoming Symposium in May 2025 at the University of Wisconsin-Madison, I have cherished every opportunity to connect with our members and celebrate the incredible mathematics shared within our community. I look forward to reconnecting with you and diving into the amazing mathematics that awaits us.

In 2018, AWM launched a task force to "understand and improve how AWM functions and to consider new initiatives that would promote inclusivity in our organization." The recommendations of this task force encouraged committees and leadership to reflect on accomplishments and identify areas for growth. We embraced this charge, and in November 2024, the Executive Committee approved a thoughtful response report that outlines our progress, highlights areas for continued focus, and affirms our commitment to transparency and continuous improvement.

Membership remains at the heart of AWM. We will continue strengthening ties between members and institutional sponsors, ensuring that AWM remains a vital resource for mathematicians at every stage of their careers. By deepening our engagement with student chapters and fostering the next generation of leaders, we aim to sustain a vibrant pipeline of talent and innovation in mathematics.

Looking ahead, we will continue fostering meaningful connections through programming and advocacy efforts that engage you, our members, and amplify your work. Our Virtual Seminar Series will continue to bring mathematicians together, offering accessible opportunities for collaboration and knowledge-sharing. We also look forward to hosting vibrant events at the Joint Mathematics Meetings, MathFest, and other key gatherings, where members can connect, share ideas, and celebrate one another's accomplishments.

As we move forward, AWM is also undergoing a leadership transition. I am honored to pass the torch to Dr. Raegan Higgins, whose passion, vision, and dedication will propel AWM to new heights. Her leadership will ensure that AWM continues to thrive as a cornerstone of support and inspiration for women and girls in mathematics. I look forward to supporting her and witnessing the extraordinary accomplishments of our community under her guidance.

I also want to express my heartfelt gratitude to Dr. Darla Kremer, AWM's Executive Director, for her exceptional leadership and unwavering dedication. Her steady guidance has ensured that AWM operates seamlessly, enabling us to fulfill our mission and support

continued on page 2

ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM was founded in 1971 at the Joint Meetings in Atlantic City.

The *Newsletter* is published bi-monthly. Articles, letters to the editor, and announcements are welcome. Authors sign consent to publish forms. The electronic version is freely available at awm-math.org.

Opinions expressed in *AWM Newsletter* articles are those of the authors and do not necessarily reflect opinions of the editors or policies of the Association for Women in Mathematics.

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PRESIDENT'S REPORT *continued from page 1*

our members. AWM is truly fortunate to have her at the helm, and I feel privileged to have served as President alongside her.

Being your AWM President has been an incredible honor and joy. I am endlessly inspired by the passion, dedication, and camaraderie of this extraordinary community. Thank you for your trust and support—it has been a privilege to serve and celebrate this journey with you, and I look forward to continuing to support AWM in the years ahead!

Talitha Washington

Talitha Washington
January 23, 2025

AWM Honors 2025 Dissertation Prize Winners: Yvonne Alama Bronsard, Agustina Czenky, and Naomi Sweeting

Yvonne Alama Bronsard received her PhD in 2024 from the Laboratoire Jacques-Louis Lions, Sorbonne Université, under the direction of Katharina Schratz. She is currently a National Science Foundation Postdoctoral Fellow at IRMAR in Rennes, France and will continue her fellowship at MIT in 2025.

Yvonne Alama Bronsard's dissertation lies at the frontier of computational mathematics and partial differential equations (PDEs) and provides a novel class of numerical schemes for nonlinear PDEs with strong geometric properties at low regularity, which allow a practical implementation at reasonable cost. The numerical schemes she obtained fill a void, since they are suitable for a wide range of dispersive equations, and their symmetrical extension ensures remarkable long-time behavior. Alama Bronsard has produced a masterly piece of work. Her dissertation will push forward high impact research on the challenging interface of computational mathematics and nonlinear partial differential equations.

Response from Bronsard. I am greatly honored to be awarded the AWM Dissertation Prize, and deeply grateful to everyone who encouraged me throughout my graduate years. I would like to especially thank my advisor Katharina Schratz, whose guidance and enthusiasm enlightened my mathematical journey. Many thanks also to Arieh Iserles, who has always avidly supported my work and my career, and to my brilliant collaborator Georg Maierhofer, thanks to whom I applied to this award. Finally, I am very thankful for the enriching environment of the Laboratoire Jacques-Louis Lions, where I completed my PhD studies. I now thank Lia Bronsard, who has marked my path the most, who

accompanied me throughout my career (starting with a conference in Calculus of Variations at the age of two months), and with whom I now share my passion for mathematics. I would like to finish by sincerely thanking the selection committee for their time, and the AWM for its wonderful support of the community of women in mathematics.

Agustina Czenky received her PhD in 2024 from the University of Oregon under the direction of Victor Ostrik. She is currently a Simons Collaboration Assistant Professor at University of Southern California.

In her dissertation, Czenky solved two significant problems within the realm of tensor categories that are related but quite different. Her dissertation is exceptional. First, she classified symmetric fusion categories of positive characteristic of rank 3 and nearly completed the classification in rank 4, leaving only the cases of characteristics 5 and 7 outstanding. In the second part of her thesis, Czenky explicitly constructs two types of unoriented 2-TQFTs that arise from variants of Deligne categories. "The resulting 52-page work is ambitious and technically very sophisticated." This body of work resulted in two solo authored papers in *International Mathematics Research Notices* (IMRN) and *Quantum Topology*.

Response from Czenky. I am truly honored to receive the AWM Dissertation Prize. I would like to thank the AWM, the selection committee, and those who nominated me for this recognition. I am deeply grateful to my advisor Victor Ostrik for his guidance, support and generosity during my graduate school years. I wish to also specially thank Julia Plavnik and Chelsea Walton for their encouragement and advice along the way. The AWM Student Chapter was a big part of my graduate student life, providing a community that I am very fortunate to have been part of. Finally, I want to thank my family and friends for their constant support and belief in me.

Naomi Sweeting received her PhD in 2024 from Harvard University under the direction of Mark Kisin. She is currently a National Science Foundation Postdoctoral Fellow at Princeton and will start as an Assistant Professor at MIT in 2026.

Naomi Sweeting has done outstanding research in the area of Number Theory under the direction of Mark Kisin at Harvard University. In her thesis, entitled "Tate classes and endoscopy for GSp(4) over totally real fields," she attacked the Tate conjecture for a particular family of Tate classes on Shimura varieties, constructed using the theory of endoscopy for automorphic forms. Shimura varieties parametrize abelian varieties with extra structures, like polarizations, endomorphisms, and level structures. On any variety, particularly moduli spaces, the algebraic cycles are a key ingredient in studying their Chow and cohomology rings. The Tate conjecture predicts that all Tate classes are spanned by algebraic cycles. Sweeting shows that a natural algebraic cycle generates the

continued on page 4

Membership Dues
Membership runs from Oct. 1 to Sept. 30
Individual: $70/$100 **Family:** $40
Contributing: $160/$190
New member, affiliate and reciprocal members, retired, part-time: $35
Student: $25 **Unemployed:** $20
Outreach: $10
AWM is a 501(c)(3) organization.

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AWM offers a tiered pricing structure for institutional memberships in six categories. Higher levels are:
Supporting Institutions: $750+ and
Sponsoring Institutions: $3000+
See awm-math.org for details.

Executive Sponsorship Levels
$5000+
$2500–$4999
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Payment—Payment is by check (drawn on a bank with a US branch), US money order, or international postal order. Visa and MasterCard are also accepted.

Newsletter Ads—AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Managing Director, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the Newsletter must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is $130 for a basic four-line ad. Additional lines are $16 each. See the AWM website for *Newsletter* display ad rates.

Newsletter Deadlines
Editorial: 17th of January, March, May, July, September, November
Ads: Feb. 1 for March–April, April 1 for May–June, June 1 for July–August, August 1 for September–October, October 1 for November–December, December 1 for January–February

Addresses
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2025 DISSERTATION PRIZE WINNERS *continued from page 3*

Tate classes which are associated with generic members of the endoscopic L-packets on GSp(4). Her construction is considered creative, technically strong, and revolutionary in the field by her nominators. "I find this result really fascinating, as it tests the Tate conjecture in a setting where the Tate classes are produced by a completely non-algebraic method, involving endoscopy. The proof is really remarkable."

Response from Sweeting. It's truly an honor to be receiving the AWM dissertation prize. I would like to extend my heartfelt thanks to Mark Kisin, for all of the incredible advice and encouragement he gave me as my PhD supervisor. I am also grateful to all of my friends and colleagues at the Harvard math department for creating a wonderful environment in which to complete my PhD, and to my family for always supporting me. Finally, I wish to sincerely thank the AWM, as well as those who took part in my nomination.

The AWM Dissertation Prize was established in 2016, an annual award recognizing exceptional work in a dissertation defended in the last 24 months. The award is intended to be based entirely on the dissertation itself, not on other work of the individual. The prizes were presented on January 8, 2025 during the Joint Prize Ceremony at the Joint Mathematics Meetings in San Francisco, CA. Full citations and responses from the prize winners are posted at www.awm-math.org/awm-dissertation-prize*, AWM Dissertation Prizes 2025.*

CORRECTION

Correction to the Nov/Dec 2024 Education Column: The original source of a quote attributed to Judy Marquez-Kiyama should have been acknowledged as Barek, H., Namukasa, I., Ravitch, S. M. (2021, August 23). *Pedagogies of Care in Precarity*. Teaching Methods Sage Research Methods Community. Available at https://researchmethodscommunity.sagepub.com/blog/pedagogies-of-care-in-precarity

ASSOCIATION FOR WOMEN IN MATHEMATICS

Student Chapter Awards 2025

What projects, events, or programs could your student chapter undertake in this new school year? We love hearing about and featuring these programs, so be sure to complete the end of year survey in May and nominate your institution (chapter).

ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM ONLINE

The *AWM Newsletter* is freely available online.

Online Ads Info: Classified and job link ads may be placed at the AWM website.

Website: https://awm-math.org
Updates: webmaster@awm-math.org

Media Coordinator
Kimberly Ayers, socialmedia@awm-math.org

AWM DEADLINES

RCCW Proposals: February 1 and July 1, 2025

AWM Travel Grants: February 15 and May 15, 2025

AWM Mentoring Travel Grants: February 15, 2025

AWM Fellows: May 15, 2025

AWM Louise Hay Award: May 15, 2025

AWM M. Gweneth Humphreys Award: May 15, 2025

AWM Microsoft Research Prize in Algebra and Number Theory: May 15, 2025

AWM Sadosky Research Prize in Analysis: May 15, 2025

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2025 AWM Alice T. Schafer Mathematics Prize Winners Announced

The Association for Women in Mathematics (AWM) awarded the 35th Annual Alice T. Schafer Prizes for Excellence in Mathematics by an Undergraduate Woman to **tahda queer**, a math and interdisciplinary studies major at City University of New York, **Marie-Hélène Tomé**, a mathematics major at Duke University, and **Katherine Tung**, a mathematics major at Harvard University. The 2025 AWM Alice T. Schafer Mathematics Prizes were presented during the Joint Awards Celebration at the 2025 Joint Mathematics Meetings in Seattle, WA.

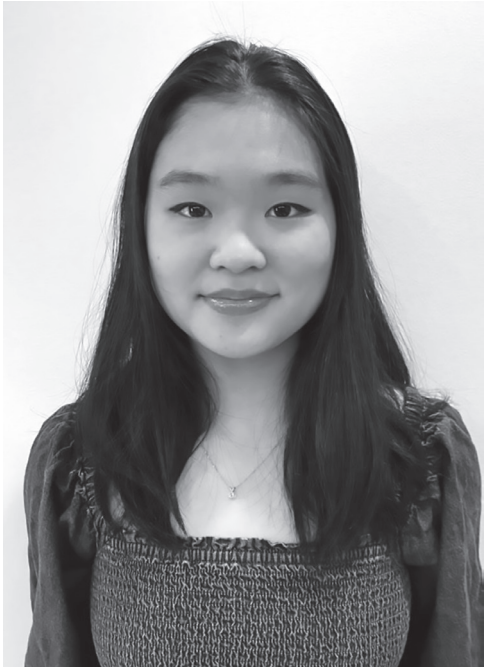
tahda queer is a mathematics and Thomas Hunter Honors Program (THHP) interdisciplinary major at City University of New York (CUNY), with keen interests in discrete mathematics and probability theory. Although having endured many personal struggles, tahda has shown extreme resilience and determination in their journey through mathematics, thriving and succeeding in many of their endeavors. tahda has been awarded many scholarships, including the Goldwater Scholarship and the oSTEM Undergraduate Scholarship. Their first paper, resulting from the UCSB Math REU, is published by the Journal of Applied and Computational Topology. tahda then studied integer partitions through the Queens Experience in Discrete Mathematics (QED), an academic-year REU at CUNY. In 2023, tahda was a participant of SUAMI at CMU, where they disproved a published conjecture and delivered more original results in extremal combinatorics with their collaborators. In spring 2024, tahda started working on an ongoing biology-inspired probability project at Baruch College, and in summer 2024, contributed to research in lattice theory at NYC Discrete Math REU. In addition to their strong publication record, tahda has given an impressive number of presentations at conferences such as the National Association of Mathematicians (NAM) MATHFest and the Spectra Survey of Mathematics Conference.

As well as their academic achievements, tahda is praised for their ability to work with others and their drive to help their community. This is particularly evident in their efforts organizing the NSF-funded Online Undergraduate Resource Fair for the Advancement and Alliance for Marginalized Mathematicians (OURFA2M2).

Marie-Hélène Tomé is a mathematics major at Duke University interested in number theory and algebraic geometry. Through her participation in numerous research experiences, she has built an impressive body of work, including a solo paper published in the *Journal of Number Theory*. Her mentors praise her intuition, describing her as a fast learner and a deep thinker. They have indicated that she is already producing work at the level of a strong PhD student and believe she will become a leading researcher. She has received numerous awards for her scholarship, including a Goldwater Scholarship and a National Merit Scholarship.

In addition to her mathematical abilities, her mentors commend her commitment to serving the mathematical community. Her contributions include volunteering in math circles, TAing for several courses, and serving on various STEM clubs on campus.

continued on page 6



Katherine Tung is a mathematics major at Harvard University. Her impressive mathematical skills showed early through her participation in MIT's PRIMES program conducting original research in mathematics while she was a senior in high school. As a result, she co-authored a paper which was published in the *Bulletin of the London Mathematical Society*. As an undergraduate, Katherine participated in the Duluth Mathematics REU, as well as in research programs at the University of Minnesota-Twin Cities and at Northwestern University. She produced outstanding works that resulted in two other publications, one of them a solo paper, and four preprints with her collaborators. She also has four papers in preparation. Her mentors applaud her exceptional character and deep passion for mathematics and are impressed by her ability to adopt a comprehensive perspective on the problems she studies. She is considered to be among a select group of students with coursework and research at a level comparable to that of a math graduate student at a top institution.

Katherine has excellent communication skills and gives superb talks. She has presented her research at the Joint Mathematics Meetings, at the Women in Mathematics in New England conference, and at Aachen University in Germany. She has taught abstract algebra to high school students from underprivileged and underrepresented groups and served in a leadership role for Harvard's Gender Inclusivity in Mathematics group.

In 1990, the Executive Committee of the AWM established the annual Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman. The prize is named for Alice T. Schafer (1915–2009), one of the founders of AWM and its second president, who contributed greatly to women in mathematics throughout her career. Full citations and responses from the winners are posted at https://awm-math.org/awards/schafer-prize-for-undergraduates/schafer-prize-2025/

NSF-AWM Travel Grants for Women

Mathematics Travel Grants. The objective of the NSF-AWM Travel Grants is to enable women mathematicians to attend conferences in their fields, which provides them a valuable opportunity to advance their research activities and their visibility in the research community. Having more women attend such meetings also increases the size of the pool from which speakers at subsequent meetings may be drawn and thus addresses the persistent problem of the absence of women speakers at some research conferences. The Mathematics Travel Grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant's field of specialization.

Selection Procedure. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM. A maximum of $2300 for domestic travel and of $3500 for foreign travel will be funded. For foreign travel, US air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

Eligibility and Applications. Please see the website (https://awm-math.org/awards/awm-grants/travel-grants/) for details on eligibility and do not hesitate to contact awm@awm-math.org or 401-455-4042 for guidance. Applications from members of underrepresented minorities are especially welcome.

Deadlines. There are three award periods per year. Applications are due **February 15**, **May 15**, and **October 1**.

BOOK REVIEW

Book Review Editor: Margaret Bayer, University of Kansas, Lawrence, KS 66045-7523, bayer@ku.edu

Mathematics for Ladies: Poems on Women in Science
Jessy Randall. 2022, Goldsmiths Press. ISBN 9781913380489
Paperback.

Reviewer: Barbara Keyfitz, The Ohio State University (Emerita), keyfitz.2@osu.edu

This thought-provoking book consists of short poems, many written in the voices of women scientists, covering almost a millennium. They are arranged in chronological order. The first woman recognized is Hildegard of Bingen (1098-1179), an abbess who wrote a text on herbal medicine (available in translation from Amazon), and who was recently sainted. The poem mentions that unicorns appear in her book, *Physica*, and that they are as unlikely as saints. The final poem is written in the voice of Maryam Mirzakhani, and ends,

"They say first. I say, not last."

The author, Jessy Randall, is a poet whose day job is Special Collections Librarian at Colorado College. According to an acknowledgment in the book, many of the poems first appeared in literary journals, before being collected in this volume. The title is a phrase apparently coined in the Soviet Union to describe theoretical mathematics that was not grounded in engineering, engineering being considered at the time a masculine pursuit. Several of the voices in the list of about 60 women are mathematicians, but Randall's characters cover many branches of science and medicine.

Reviewing a book of poems is somewhat different from reviewing a research study, a biography or even a novel. The purpose of reading a poem is not generally to increase your knowledge of a subject, although I did learn many things I had not known. The brief space given to each character in the book is not intended to be a biography, but I learned that the Apgar score, with which every parent is familiar, was named after Virginia Apgar, a physician and anesthesiologist, who invented a quantitative method to assess which newborn babies most needed medical intervention.

Rather, it seems to me (a non-expert who loves poetry) that one finds in a poem one cares about a recognition of an emotional state, a line or two that remains in one's memory. An example is the conclusion of the Apgar poem

> My numbers – their babies' numbers –
> more important than anything else in the world.

Some of the poems revel in irony or absurdity. Readers of our generation may remember the tragedy of thalidomide, and American readers may know that its distribution in the United States was withheld by the FDA. The person responsible for that decision was Frances Oldham Kelsey. Randall's poem chooses, from her long life (she lived to be 101), to notice that she was accepted to graduate school in pharmacology because the admissions department did not realize that, with that spelling, Frances is a woman's name. The poem makes touching reference to the fact that parents will love their children unconditionally, whatever their infirmities. Randall writes

> A confusion of the letters
> *e* and *i* saved generations
> of parents and kids
> from love *in spite of*.

Perhaps it is not surprising that more than one poem mentions the difficulties women scientists face. As the poem on Kovalevsky concludes,

> Rules work for numbers, most of the time.
> They don't work for women, at least not now.

Nonetheless, it seems odd that the voice of Maria Goeppert Mayer, who was the second woman to receive the Nobel Prize in physics, does not mention honors but only snubs—

> Men got the credit, but the spin was mine.

However, there can be humor in what is not said. Mary Golda Ross, engineer of Cherokee descent, who designed rockets for Lockheed (much of her work remains classified to this day), speaks only of stumping the panel on a game show:

> Bennett Cerf thought maybe
> I counted down the numbers
> to set the rockets off.
>
> He laughed and laughed. It was TV.
> No one said *Native American*
> or *Indian* or *Cherokee*.
>
> I was demure in my dark gown,
> dark gloves, and sparkling jewels,
> It was 1958. I kept my lips zipped.

Among other notable women whose contributions I had not known is Helen Rodriguez-Trias, a physician and public health advocate, who is given the words

> Over and over I've had to prove myself
> to white women. Meanwhile, over and over,
> those women have to prove themselves to men,
> . . .

I particularly liked the metaphor in the poem about Evelyn Boyd Granville. It is well-known that she was refused admission to mathematics meetings held in "whites only" hotels:

continued on page 8

BOOK REVIEW *continued from page 7*

> In mathematics we say a number is even
> if we can divide it by two,
> or to be more precise, if we can divide it
> *evenly* by two. Anything can be divided
> by two. Anything can be divided.

Some of the time, Randall seems to be a bit stumped by mathematicians. Her poem on Sophie Germain (who she calls Marie Germain) focuses on her parents depriving her of heat and light to keep her from studying. And Mary Ellen Rudin's poem is about her house, designed by Frank Lloyd Wright (and apparently quite geometrical). To understand the words that Emmy Noether, gets to say—

> Those boys* weren't the reason
> I had to leave Gottingen.
> They didn't exile me from my homeland.
> They were as innocent as numbers
> when it came to my death.

—it helps to have read the Wikipedia entry for Noether, which observed that she typically "remained focused on mathematics, gathering students in her apartment to discuss class field theory. When one of her students appeared in the uniform of the Nazy paramilitary organization Sturmabteilung (SA), she showed no sign of agitation, and, reportedly, even laughed about it later."

We mathematicians may also not know the history of women in our profession very well. Nina Bari (1901-1961) was a student of the Russian and Soviet mathematician Nikolai Luzin (analysts do know Luzin's Theorem); her poem serves to explain the title of the book. It seems that the Soviets did not care for Luzin's work —

> . . . a new kind of math,
> descriptive math, something more like
> philosophy, sometimes described as
> *mathematics for ladies*.

Bari is known for her results on trigonometric series and almost everywhere convergence. She worked in France, Poland, Italy and the Soviet Union, and was killed when struck by a train in Moscow. Randall writes

> There's no way to know. It could have been an accident.
> But when a woman had made her name calculating
> functions that converge almost everywhere,
> we have to think she knew what she was doing.

I can't quote all the most striking lines from all the poems here, but they are all worth reading. One of the longest poems is about Ellen Swallow Richards, who is described in Wikipedia (an invaluable background guide) as an industrial and safety engineer, environmental chemist and university faculty member:

> . . . I was the first
> woman allowed into MIT. I'm not proud of it,
> I'm disgusted. That all the women before me
> were turned away?
> . . .
>
> . . . Or maybe
> I am inviting myself to join you, women
> of the future, women sitting next to other women
> in the lecture hall, women standing next to other women
> in the lab. I don't know the chemistry that will
> make this happen, but you do, and you're doing it.

Sometimes I think we don't know how lucky we are. And we are lucky to have this charming book.

* *Referring to members of the SS, which were a subset of the SA*

CALL FOR PROPOSALS

Research Collaboration Conferences for Women

The AWM works to establish and support research networks for women in all areas of mathematics research. In particular, the AWM RCCW Committee provides mentorship and support to new networks wishing to organize a Research Collaboration Conference for Women (RCCW). The Committee offers help finding a conference venue, developing and submitting a conference proposal, and soliciting travel funding for participants. Thanks to a National Science Foundation grant, some funding may be available through the AWM to support new RCCWs, especially inter-disciplinary proposals and proposals that bring together researchers from traditionally underrepresented populations.

Mathematicians interested in organizing the first conference of a new RCCW are invited to submit a proposal to the AWM describing the conference topic, potential co-organizers and project leaders, and potential participants. Proposals should be no more than one page (PDF files only, please) and should be sent to awm.rccw@gmail.com. Deadlines for submission: **July 1**.

More information about Research Collaboration Conferences for Women, existing RCCW networks, and related initiatives can be found at http://awm-math.org/programs/research-networks/.

2026 AWM Prizes and Awards Call for Nominations

Nominations for the following AWM prizes and awards will be accepted between April 1 and May 15, 2025 on mathprograms.org and will be presented during the Joint Prize Session at the Joint Mathematics Meetings in Washington, DC in 2026.

2026 Class of AWM Fellows

The Association for Women in Mathematics Fellows Program recognizes members of any gender who have demonstrated a sustained commitment to the support and advancement of women in the mathematical sciences, consistent with the AWM mission: "to create a community in which women and girls can thrive in their mathematical endeavors, and to promote equitable opportunity and treatment of women and others of marginalized genders and gender identities across the mathematical sciences." For more information, visit https://awm-math.org/awards/awm-fellows/.

2026 Louise Hay Award

The Louise Hay Award for Contributions to Mathematics Education recognizes outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being. For more information, visit https://awm-math.org/awards/hay-award/.

2026 M. Gweneth Humphreys Award

The M. Gweneth Humphreys Award recognizes outstanding mentorship activities. This prize is awarded to a mathematics teacher who has encouraged women undergraduate students to pursue mathematical careers and/or the study of mathematics at the graduate level. M. Gweneth Humphreys (1911–2006) taught mathematics to women for her entire career, first at Mount St. Scholastica College, then for several years at Sophie Newcomb College, and finally for over thirty years at Randolph-Macon Woman's College. This award, funded by contributions from her former students and colleagues at Randolph-Macon, recognizes her commitment to and her profound influence on undergraduate students of mathematics. For more information, visit https://awm-math.org/awards/humphreys-award/.

2026 AWM Microsoft Research Prize in Algebra and Number Theory

The AWM Microsoft Research Prize in Algebra and Number Theory highlights outstanding research by a woman in algebra and Number Theory. Made possible by a generous contribution from Microsoft Research, this prize has been awarded every other year since 2014. For more information, visit https://awm-math.org/awards/awm-microsoft-research-prize/.

2026 AWM Sadosky Research Prize in Analysis

The AWM Sadosky Research Prize in Analysis highlights outstanding research by a woman in Analysis. The award is named for Cora Sadosky, a former president of AWM and made possible by generous contributions from Cora's husband Daniel J. Goldstein, daughter Cora Sol Goldstein, friends Judy and Paul S. Green and Concepción Ballester. For more information, visit https://awm-math.org/awards/awm-sadosky-research-prize/.

MEDIA COLUMN

Media Column Editors: Sarah J. Greenwald, Appalachian State University, appalachianawm@appstate.edu, and Alice Silverberg, University of California, Irvine, asilverb@uci.edu

Film Review: *Journeys of Black Mathematicians: Forging Resilience*

Directed by: George Csicsery, Genre Documentary, Biography
Release Year: 2024

Journeys of Black Mathematicians: Forging Resilience is an inspiring documentary that sheds light on the struggles, triumphs, and contributions of Black mathematicians. Directed by George Csicsery, the film weaves personal narratives with historical context to display the resilience of individuals who defied the odds in a field that has often been challenging for people of color to access and navigate.

Over 50 Black mathematicians are featured in the film, which delves into their early inspirations, educational journeys, and career milestones through interviews, archival footage, and personal anecdotes. These mathematicians reveal the obstacles they faced, including systemic discrimination, and share how they overcame those barriers to pursue their passion for mathematics and make significant impacts in academia and beyond.

The documentary's strongest asset is its personal approach. Each mathematician's story is unique, yet they all reflect shared experiences of resilience, making the film deeply impactful. The pacing is well-executed, balancing individual stories with historical insights that provide a comprehensive look at the landscape of Black mathematicians, who are not only experts in their fields but also mentors, role models, and advocates for greater diversity in STEM. The film allows each mathematician's personality to shine, creating a sense of warmth and authenticity. The director does a commendable job highlighting both the intellectual and emotional aspects of their journeys, which adds depth and relatability to their stories.

One such example is the story of Zerotti Woods. A native of Atlanta, GA, Woods was uncertain of his next step after high school graduation—"be an outlaw or a schoolboy." With the mentorship of his professors, Woods is a proud Morehouse College graduate.

The film opens with Woods, now a research mathematician at Johns Hopkins Applied Physics Laboratory, asking children at the same recreation center he attended as a child to share what they believe a mathematician looks like. The children give various responses, and then multiple mathematicians, including AWM President Talitha Washington and AWM At-Large Committee Member Monica Jackson, state their names and say, "I am a mathematician." As the documentary concludes, Woods says, "A lot of people in this world are going to tell you that you can't. And I'm a person that looks like you, and I'm going to tell you that you can."

The cinematography, while understated, is remarkably effective. Through an intimate lens, the camera captures the perseverance and brilliance of Black mathematicians, framing them not just as scholars but as trailblazers within a field where their representation has long been sparse. The shots oscillate between focused portraits of these mathematicians and their intellectual environments, classrooms, lectures, and whiteboards cluttered with intricate equations. The archival photos document the progress that has been made but also poignantly remind the viewer of the enduring fight for inclusion, recognition, and equality in academia and the broader STEM community.

At its core, *Journeys of Black Mathematicians* explores resilience and the power of community, particularly within historically Black colleges and universities (HBCUs). It examines themes of perseverance, representation, and mentorship, emphasizing the importance of visibility in fields where Black individuals have been historically underrepresented. The film highlights how institutions like Howard University, Morehouse College, Morgan State, and Spelman College have been essential to these journeys, both today and since the 1940s. The need for structural changes within educational and professional institutions to create an environment where diverse voices are genuinely heard and appreciated is spotlighted throughout the presentation. This is the very reason the founders of the National Association of Mathematicians, including Thyrsa Frazier-Svager, Vivienne Malone-Mayes, Argelia Velez-Rodriguez, and Harriet J. Walton, assembled at the Joint Mathematics Meeting in 1969. Their focus was building a future of inclusivity, diversity, and equity for everyone pursuing the field. With the upcoming change of the residents of the White House, there is a need for the mathematical descendants of the field's Black pioneers to work strategically to maintain and enhance the space of community and belonging. Will we see an increase in enrollment at HBCUs, as Dennis Davenport mentions?

Spelman College can be viewed as a pioneer in increasing the number of Black women in the mathematical sciences. Spelman College Professor Emerita and EDGE (Enhancing Diversity in Graduate Education) Cofounder Sylvia Bozeman described the curriculum goals of Etta Falconer and Shirley McBay. Those leaders were determined to increase the number of students in the STEM disciplines. Within 20 years, there was a 200% increase (from 10 to 30) in the number of Spelman science majors and math majors. Bozeman said, "You couldn't work harder than Etta Falconer. She outworked us all." The benefit of Falconer's work ethic is visible today in the mathematics community, as many of its leaders are Spelman alumnae. Some featured in the film are Emille Davie Lawrence, Anisah Nu'Man, Monica Stephens, Talitha Washington, Shelby Wilson, and Ulrica Wilson. Naiomi Cameron, Professor and Chair of the Department of Mathematics

at Spelman College, shares how her students appreciate having a Black woman mathematician as a professor who is interested in their success. As a proud HBCU alum, Cameron never had that experience. Cameron says, "We're experiencing together a common expectation of excellence."

I shared this film with my mother as a way to invite her into my professional world, offering her a chance to experience a narrative that deeply connects with both my personal and intellectual path. After watching, she said, "Prior to viewing this documentary, I was unaware of the vast number of Blacks and people of color with advanced degrees in mathematics. This impacts not only academia but other industries as well. This film should be shown to young students of color to encourage their participation in STEM and make them aware of the shoulders on which they stand."

Journeys of Black Mathematicians: Forging Resilience is a powerful and uplifting documentary that deserves to be seen. It sheds light on the invaluable contributions of Black mathematicians and the obstacles they have overcome to succeed in a challenging field. It is a must-watch for anyone interested in STEM, social justice, or personal stories of resilience—"the middle name of African Americans," as Tasha Inniss, Xavier University alumna and Vice Provost for Research at Spelman College, so eloquently puts it. By the end, audiences are left with not only admiration for Black mathematicians but also a greater understanding of the importance of diversity in academia.

Reviewed and written by Raegan Higgins, Ph.D.

Editor's Note: See https://zalafilms.com/jbm/airdates.html for Public Television stations that will air *Journeys of Black Mathematicians: Forging Resilience* and *Journeys of Black Mathematicians: Creating Pathways* in February or March.

NSF-AWM Mentoring Travel Grants for Women *(New deadline added!)*

Mathematics Mentoring Grants. The objective of the NSF-AWM Mathematics Mentoring Travel Grants is to help junior women to develop long-term working and mentoring relationships with senior mathematicians. This relationship should help the junior mathematicians to establish their research programs and eventually receive tenure. Each grant funds travel, accommodations, and other required expenses for an untenured woman mathematician to travel to an institute or a department to do research with a specified individual for one month. The applicant's and mentor's research must be in a field which is supported by the Division of Mathematical Sciences of the National Science Foundation.

Selection Procedure. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM. A maximum of $5000 per award will be funded.

Eligibility and Applications. Please see the website (https://awm-math.org/awards/awm-grants/travel-grants/) for details on eligibility and do not hesitate to contact us at awm@awm-math.org or 401-455-4042 for guidance. Applications from members of underrepresented minorities are especially welcome.

Deadline. There are now two award periods per year. Applications are **February 15 and August 15**.

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EDUCATION COLUMN

Education Column Editor: Jackie Dewar, Loyola Marymount Unversity, jdewar@lmu.edu

Contextualizing Introductory Statistics: Exposing the Dark Side

Helen Burn, Mathematics Faculty and Curriculum Research Group Director, Highline College

Students benefit from learning the context in which the topics they are studying were developed. Indeed, our professional associations offer resources for teaching the history of mathematics (Barrow-Green, Gray, & Wilson, 2019) including attention to historically marginalized groups (Beery, Greenwald, & Kessel, 2022). Context brings abstract subjects to life by incorporating lived experiences and social circumstances often overlooked in a discipline such as mathematics that can be perceived as neutral, universal, and disconnected from social, political, or historical influences—what I will refer to as "context."

As an educator who primarily teaches introductory statistics courses to health science and cybersecurity majors, this article reflects my personal journey in learning about the context in which statistics applied to human populations was developed. There is a dark side to the story. While my exploration continues, this history is increasingly important for students to understand, especially given the rise of statistics in undergraduate curricula and the growing prominence of data science and its ties to artificial intelligence. The article concludes with practical suggestions for engaging students in understanding the context of mathematical topics, applicable to any subject.

Providing Context for Introductory Statistics

My awareness of the context of statistics grew during the COVID-19 pandemic when the online journal *Nautilus* published "How Eugenics Shaped Statistics (Clayton, 2020)." This article is essential reading for anyone teaching introductory statistics, as it outlines the troubling connections between the development of statistical methods and the eugenics movement, which gained momentum in the early 20th century and culminated in the atrocities of the Holocaust. The horrific consequences of eugenics may partly explain why these links are not widely known within the discipline. Clayton's article inspired me to conduct my own archival research during a sabbatical, visiting key institutions in England and Belgium.

For those unfamiliar with the term, eugenics was a movement founded by Sir Francis Galton (1822–1911) in the late 19th century to promote selective breeding of humans, akin to practices used in plants and animals. Galton, a cousin of Charles Darwin (1809–1882), was inspired by Darwin's (1859) *On the Origin of Species by Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life*. Galton studied the heritability of traits among humans. He aimed to cure what he termed *social degradation* by encouraging or promoting the reproduction of those deemed genetically superior (positive eugenics), while discouraging or preventing the reproduction of those deemed inferior (negative eugenics). It is important to remember that during this period of colonialism, studying human diversity became intertwined with colonial power structures. Upon his death, Galton bequeathed funds to establish the Galton Professorship of Eugenics at University College London (UCL), where the first Department of Applied Statistics and Eugenics was formed. Under the leadership of Karl Pearson (1857–1936) and later Ronald Fisher (1890–1962), nearly all the basic techniques of modern statistics—correlation, regression, the t-test, and chi-square goodness of fit test—were developed as tools for the eugenics program (Kennedy-Shaffer, 2023; Solanke et al., 2020).

The eugenics movement resulted in forced sterilizations, justified colonial exploitation, and ultimately contributed to the horrors of the Holocaust. It is crucial for students of statistics to understand these historical roots, as many of the statistical methods we use today were developed within this troubling context. Moreover, with the rise of generative artificial intelligence and the data used to train these systems, understanding the potential for misuse and harm is more important than ever.

A second early historical figure is Adolphe Quetelet (1789–1874), who is credited with being the first to apply the concept of the "average" to human beings and pioneered the use of probability theory and the law of large numbers to analyze social phenomena. Quetelet's work predates Francis Galton and the establishment of eugenics at UCL, laying an important foundation for the application of statistical methods to human populations. I first learned about Quetelet through the 99% Invisible podcast *On Average* (Trufelman, 2016), another key piece for any statistics educator. Quetelet, a Belgian astronomer, became a prominent figure—truly a celebrity scientist—in the early 19th century. He learned about the Gaussian (normal) curve directly from Carl Friedrich Gauss (1777–1855) and was the first to apply the normal curve to human populations. He also developed the Quetelet Index—now known as the Body Mass Index (BMI)—when he was asked to create a formula to determine whether a male was fit to be a soldier in the Belgian army.

From the mid-1820s onward, Quetelet applied probability theory to large social data sets in search of patterns, measuring everything from births and deaths to suicides, height, and criminality (Bracke, 2018). Although he did not use the term "correlation," Quetelet sought to identify relationships within his data. For instance, he calculated the likelihood of an individual committing a crime or becoming married at a particular age. He referred to the regularities he saw in the data as the "laws" of society. Quetelet corresponded with nearly every major mathematician and scientist

of his time, and his work was influenced by figures such as Laplace (1749–1827), Fourier (1768–1830), and Poisson (1781–1840).

Quetelet's work laid the foundation for what he termed "social physics"—the application of mathematical laws to human behavior. He detailed his findings in his seminal work *On Man and the Development of His Faculties* (Quetelet, 1835/1869), in which he introduced the concept of the "average man" (L'homme Moyen), a statistical abstraction representing the mean of various human characteristics within a population. Though influential, Quetelet's work was also criticized, particularly his formulation of "moral laws" of society, which some viewed as deterministic and fatalistic, undermining human agency and free will (Bracke, 2018).

It is noteworthy that Quetelet's ideas are widely recognized for inspiring Florence Nightingale (1820-1910), who found in his work validation for her belief in using statistics to drive social reform in areas such as sanitation, criminal law, government, and education, and to uncover the "laws" of human action through a quantitative study of human behavior (Diamond & Stone, 1981). Florence Nightingale is also known to have interacted with Galton around statistical education including in her later years when she proposed funding an endowed chair in applied statistics at Oxford. However, Nightingale sought to prioritize funding the practical use of statistics for social reform, while Galton favored funding both applied and theoretical statistics. This difference in vision came to a head around 1890, when Nightingale withdrew her funding after Galton refused to align the position with her emphasis on applied statistics (Diamond & Stone, 1981).

Both Quetelet and Galton occupied privileged positions in their respective societies, granting them access to financial resources and advanced mathematical tools, which lent their social programs—now regarded as pseudoscience—a veneer of legitimacy. Even the statistical techniques they developed, despite that they form the canon of today's curriculum, have been criticized for promoting overly simplistic views on group differences and "statistical significance" (Wasserstein & Lazar, 2016).

While this article focused on the context surrounding the development of social statistics, these ideas can be extended to any mathematical topic.

Practical Suggestions

Early in the course, I recommend using the "who, what, where, when, why" framework, beginning with a focus on "what." An activity focused on the questions below can be integrated into a discussion board in an online class or a 20-minute in-class activity. Students can leverage AI tools for information and report out their findings which can be captured in class notes. Even a small effort to provide context early on can bolster the motivation of students, especially those who may not have a natural interest in the subject.

- What topic are we studying?
- Who developed it? Consider the social status and background of the contributors, including underrepresented groups.
- Where was it developed?
- When was it developed? Was it during a significant period such as the Renaissance, Industrial Revolution, or Information Age?
- Why was it important at the time? What was occurring in society that necessitated, inspired, or motivated the development of this topic?

Midway through the course, provide students with a curated article or podcast to explore context. If you teach pure or applied mathematics, look for connections to imperialism or colonialism. For example, the Hunterian Museum at the University of Glasgow has reexamined the history of scientist James Watt (1736–1819) in the context of colonialism and the Industrial Revolution (Reeves, 2020).

Conclusion

Teaching context around the topics being studied not only makes the material more relevant to students but also fosters critical thinking. The goal is to bolster student motivation and deepen their understanding of both the subject matter and its broader societal implications. Moreover, by helping students recognize the power dynamics embedded in the development of these tools, we can educate them to be positive stewards of a discipline that has the potential to oppress and cause harm if used unethically.

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continued on page 14

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Column Editor's Note:

I am pleased to introduce readers to Helen Burn, PhD, a mathematics faculty member at Highline College in Des Moines, WA, who has just contributed her first article (above) to the Education column.

Dr. Burn directs the Curriculum Research Group at Highline College, which seeks to improve the community college math curriculum through promoting racial equity, corequisite math, math pathways, and introductory statistics. The group disseminates findings from their own research and others' research to assist mathematics faculty and their administrators to discover and understand trends in community college mathematics and their benefit to students. See https://crg.highline.edu/ for more information.

We look forward to hearing from Helen in future January/February issues of the *AWM Newsletter*.

The continuing Education Column contributors are: **Jo Hardin** (Mar/Apr), **Toya Frank** (May/Jun), myself (Jul/Aug), **Yvonne Lai** (Sep/Oct), and **Guadalupe Lozano** (Nov/Dec).

Applications for the Karen EDGE Fellowship and the Mary Beth Ruskai Research Fund are Now Available

The EDGE Foundation is delighted to announce that applications for the Karen EDGE Fellowship and the Mary Beth Ruskai Research Fund are now available!

The Karen EDGE Fellowship supports and enhances the research programs and collaborations of mid-career mathematicians who are underrepresented minorities. Fellowships are available to mid-career mathematicians employed in full-time positions in the U.S. Mathematicians of any gender identity are eligible. The award consists of $8,000 per year for three years. For more information, please visit https://www.edgeforwomen.org/karen-edge-fellowship-program/.

Apply today through MathPrograms at https://www.mathprograms.org/db/programs/1725. Applications are due **March 15, 2025**.

The Mary Beth Ruskai Research Fund for Women was established to advance the research careers of women in the mathematical sciences through travel, collaboration, or other activities. The scope of these grants reflects Beth's commitment to women and to interdisciplinary work. The award consists of $5,000 to support the grantee's research. For more information, please visit https://www.edgeforwomen.org/the-mary-beth-ruskai-research-fund-for-women/.

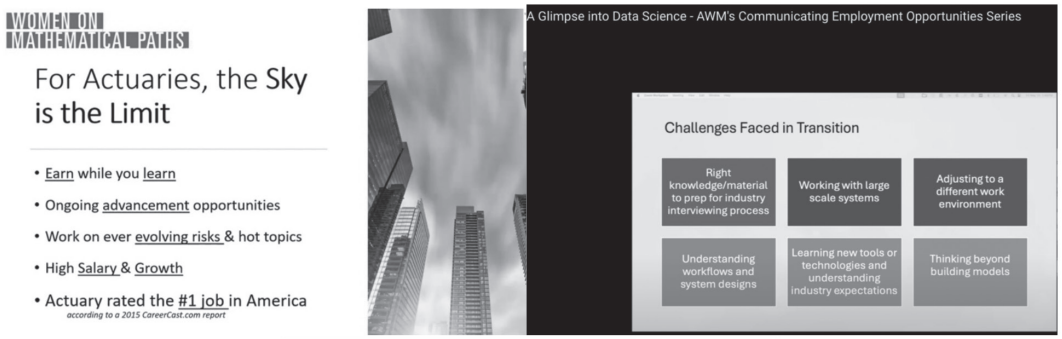
Apply today through MathPrograms at https://www.mathprograms.org/db/programs/1611. Applications are due **March 15, 2025**. Please send any questions to edgestaff@edgeforwomen.org.

Communicating Employment Opportunities

What does a career in mathematics truly look like beyond the classroom? How can gender identity shape the experiences of mathematicians in various fields? And what paths can students take to forge their own futures in this dynamic discipline? Launched in 2023, the Communicating Employment Opportunities seminar series seeks to answer these questions by connecting AWM student chapters with working mathematicians.

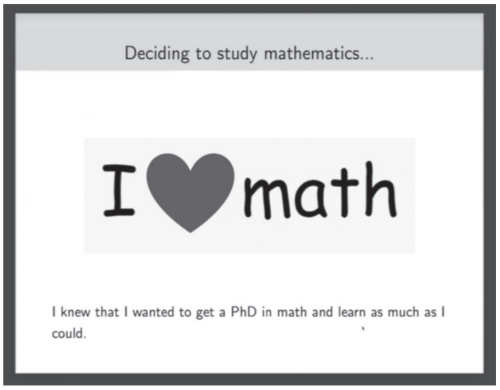
This series offers students a chance to explore the diverse pathways available to mathematics graduates—both at the undergraduate and graduate levels. Each seminar features a panel of accomplished mathematicians who share their unique journeys, discussing how their gender identities have influenced their professional experiences, the mathematical tools they employ, and the realities of being a mathematician in different sectors.

continued on page 16



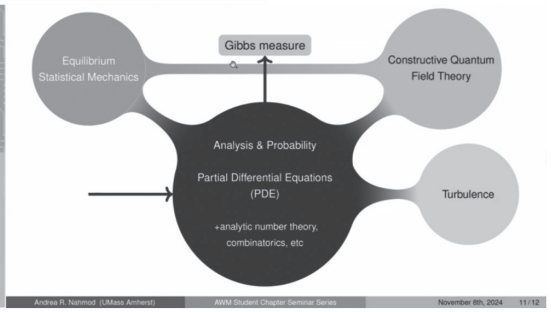
Actuarial Science (October 2023)

A Glimpse into Data Science (May 2024)



Breaking the Code – Careers in the Intelligence Community (September 2024)

Beyond the Lecture Hall – Perspectives from Academia (November 2024)



Beyond personal narratives, the panelists provide practical advice for students aspiring to enter their fields, helping them navigate the complexities of their own career paths. By fostering a sense of community and support, this initiative enriches students' understanding of the myriad roles available in mathematics, inspiring the next generation of mathematicians to envision their futures with confidence.

The series is designed to run once each semester (although this fall the committee got excited and scheduled two). So far there have been four seminars—and we are getting ready for our upcoming spring seminar *Numbers that Count—Unlocking Financial Mathematics* (March 7, 2025), which will feature a panel of individuals working in the financial sector, in a variety of types of companies and with a diversity of positions.

The series is proving to be successful, with registration for the events typically in the 100-200 range. Our panelists also offer follow-up conversations, either staying after the seminar to chat with attendees in break-out rooms or scheduling appointments at other times. If you haven't had a chance to attend any of the seminars so far, you should take a look at the YouTube videos that are linked on the AWM page. (The Communicating Employment Opportunities page is linked from the Student Chapters page.) *A Glimpse into Data Science* (May 2024), *Beyond the Lecture Hall—Perspectives from Academia* (November 2024), *Actuarial Science* (October 2023), and *Breaking the Code—Careers in the Intelligence Community* (September 2024)

We are considering future seminars on topics such as math in AI, biomathematics, and government jobs, among others. Anyone who would like to participate on a panel in one of these areas should contact one of the organizing committee members:

Sarah Ziesler, Co-Chair (sziesler@uchicago.edu) Monica Morales Hernandez, Co-Chair (mmoraleshernandez@adelphi.edu) Judy Chiang (hchiang@umn.edu) Jasmine Bhullar (jbhull01@tufts.edu) Elizabeth Donovan (beth@awm-math.org)

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For more information, see **https://www.imsi.institute/proposals**. To discuss ideas before submitting a proposal, please contact the Director at **proposals@imsi.institute**.

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Association for Symbolic Logic Student Travel Awards

The ASL offers modest student travel awards through its NSF grant to graduate students in logic to attend its annual meetings in North America and Europe. These awards are available to US citizens and permanent residents as well as to international students enrolled at US universities. You do not need to be an ASL member to apply for these awards. Air travel paid for with NSF funds must be in compliance with the Fly America Act.

The next two ASL meetings for which NSF funding is available are the 2025 North American Annual Meeting (May 13-16, 2025 at New Mexico State University in Las Cruces, NM) and the 2025 Logic Colloquium (European Summer Meeting) (July 7-11, 2025 at the Vienna University of Technology in Austria). Details for applying for student travel awards for these conferences will be posted when they become available at **https://aslonline.org/meet/**.

The ASL also offers student travel awards to ASL-sponsored meetings. These awards are only open to ASL student members but students do not need to be US citizens or attend US universities. Applications must be sent to the ASL Office at **asl@uconn.edu** at least three months before the start of the sponsored meeting. For a full list of ASL-sponsored meetings, see **https://aslonline.org/meet/**.

To be considered for a travel award for any of these meetings, please ask your thesis supervisor to send a brief recommendation letter. You must also submit a brief (1 page) letter of application that includes: (1) your name; (2) your home institution; (3) your thesis supervisor's name; (4) a one-paragraph description of your studies and work in logic; (5) a paragraph indicating why it is important to attend the meeting; (6) your estimate of the travel expenses you will incur; (7) (for NSF awards) US citizenship or visa status; and (7) (optional) an indication of your gender and minority status. Women and members of minority groups are strongly encouraged to apply.

ASL, Department of Mathematics, University of Connecticut
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The AWM Newsletter is published six times a year. If you have questions, contact AWM at **awm@awm-math.org**, 401.455.4042, or visit our website at: **https://awm-math.org.**

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☐ Family membership, *please indicate family member who is a regular AWM member:* _____ $40
☐ Contributing membership (*members earning <$90,000*)(*includes designation of a free student membership*) $160
☐ Contributing membership (*3 year membership, members earning <$90,000*) $480
☐ Contributing membership (*members earning ≥$90,000*)(*includes designation of a free student membership*) $190
☐ Contributing membership (*3 year membership, members earning ≥$90,000*) $570
☐ Part-time employed $35
☐ AWM-SIAM Reciprocity membership $35
☐ AWM-KWMS Affiliate membership $30
☐ Retired membership $40
☐ Student membership $25
☐ Unemployed membership $20
☐ Gift membership, *please indicate name and email of giftee:* _____ $70
☐ Outreach membership $10
☐ Contribution to the AWM Endowment fund ..... $_____
☐ Contribution to the AWM Annual Giving Campaign ..... $_____
☐ I *do not* want my name to appear in annual lists of contributors to AWM's funds.

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ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 55, Number 1, January–February 2025

ADDRESS CORRECTION FORM

☐ Please change my address to:
☐ Please send membership information to my colleague listed below:
☐ No forwarding address known for the individual listed below (enclose copy of label):
(Please print)

MAIL TO:

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PO Box 40876
Providence, RI 02940

or E-MAIL:

awm@awm-math.org

Name _____

Address _____

City _____ State _____ Zip _____

Country (if not U.S.) _____ E-mail Address _____

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